Operating instructions

Mityvac Brake Bleeder, Order no. 10003261

Dear Customer,
Thank you for buying our product. Please use this instruction in the application of the tool.
The Louis Team wishes you lots of fun.

Components supplied:
1 Mityvac manual vacuum pump (B)
1 120 ml liquid container with (F) graduated scale
1 suction lid (D) and 1 closing lid (J)
2 angled adapter heads (G) e.g. for brake bleeding valves, with plastic pipe connecting piece (H)
2 tapered adapter heads (I) for test purposes
3 hoses of different lengths (A, E, C) with internal diameter of 6.4 mm

The kit contains an original "Mityvac" manual vacuum pump with numerous accessories, an ideal tool for the following jobs:
- Professional, clean bleeding of hydraulic systems on motor vehicle brakes and clutches. Since it is not necessary to use the piston of the vehicle's manual hydraulic pump in order to pump through hydraulic fluid, the Mityvac permits particularly clean and tidy working. No assistant is needed.
- Testing vacuum controllers, vacuum cells, automatic fuel cocks etc.
- Pressure testing containers and pipes
- Sucking out small fluid reservoirs

Notice:
Any work on braking systems, particularly those with ABS or dual brake systems, presupposes thorough knowledge of motor vehicle engineering. Don't take unnecessary risks! Have this work carried out by a qualified workshop if you don't have the necessary knowledge. Before starting work, be sure that you have consulted a workshop manual for the particular vehicle model in order to familiarise yourself with special features of the brake system concerned, and follow the vehicle manufacturer's instructions exactly. Never put the Mityvac manual pump down on a hot surface. Do not use the Mityvac to suck up solvents. Only use silicone-based lubricants to lubricate the device. Do not use liquids based on mineral oils or other oil-based lubricants (e.g. WD-40, motor oil and so on).

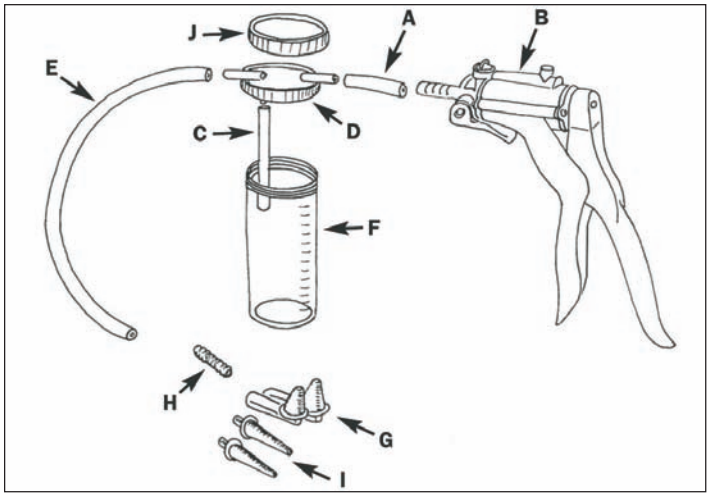
Suggested uses:
Bleeding brake systems and hydraulic clutches on motorbikes:
Assembling the device: Push the short 6.4 mm hose (A) onto the front nozzle of the manual pump (B) as shown in the sketch. Attach the 6.4 mm hose (C) to the inside of the suction lid of the fluid container (D) – connect the long 6.4 mm hose (E) to the corresponding hole on the outside of the lid (D). Connect the hole on the other side to the short hose (A) of the manual pump. Screw the suction lid (D) onto the empty fluid container (F). The 6.4 mm hose (E) is either attached directly, or through an angled adapter head (G), to connect the device to the bleed valve of the wheel brake or clutch release cylinder, depending on its size. The angled adapter heads (G) are connected to the main hose (E) of the Mityvac manual pump with the aid of the plastic connector (H).

Working procedure: Place the vehicle on a stand. Make sure that the hydraulic cylinder that is to be bled is horizontal, and that it cannot run out when the cover is opened.
Notice: Brake fluid is corrosive, and will attack painted and polished parts. Protect the surroundings (e.g. the tank) carefully by covering it and by working carefully! Wash down any spills or splashes of brake fluid immediately with plenty of water!

Remove the cover from the reservoir of the hydraulic cylinder that is to be bled. Suck out the old brake fluid with the Mityvac and fill up with new brake fluid (observe the vehicle manufacturer's DOT classification). Place a fitting box-end wrench on the bleed valve, and connect the Mityvac. Operate the manual pump to generate a slight vacuum in the receiving container. The bleed valve is now opened a little – 1/4 to 1/2 a turn is quite enough! Pump continuously to suck old brake fluid and air out of the system. Make sure that the liquid container (F) is not tilted so far that brake fluid is sucked into the vacuum pump. Pour off brake fluid if the container becomes too full.

The hydraulic system has been correctly bled and the fluid exchanged when the fluid being sucked out of the valve is clean and free from bubbles. To make sure that the system really only contains fresh fluid, it is best to suck three reservoir-fillings of new brake fluid through the system. It is essential not to pump the reservoir out until it is completely empty, as this would let more air back into the system – top up in good time with new brake fluid, and for safety's sake close the bleed valve at the hydraulic caliper. If there is play in the thread of the bleed valve on the pressure cylinder, it is possible for a small quantity of air to penetrate through this crack and to be visible as an extremely fine trail of air bubbles in the hose when pumping. Normally, however, this is not a problem. You will sense whether your hydraulic system is properly bled from the pressure point of the brakes or the function of the clutch. To do this, close the bleed valve during the last stroke of the pump. Try to develop pressure at the brake/clutch lever in this way. After a few movements of the lever you should sense a firm pressure point, which does not yield even if you keep pulling the lever for some time, at the brake. An inadequate pressure point can be a result of air remaining in the system (in which case the bleed process must be repeated), although a leak in the area of the brake calliper or a worn piston in the manual pump are also possible causes.

Once the job has been successful, close the hydraulic reservoir – the seal of the lid must be dry and clean. Finally check again to see that no brake fluid has got onto your vehicle – if it has, wash it thoroughly with water. The Mityvac is then thoroughly cleaned and the old brake fluid disposed of responsibly. The container (F) can be sealed by the closing lid (J), e.g. for purposes of transport.



Please contact our technics centre via the fax number 0049 (0)40-734195-58 resp. by Email: technikcenter@louis.de before using the article for the first time, if you have any questions on the product and/or these instructions. We will be happy to provide you with quick help. In this way, together we guarantee that the product is correctly assembled and used without any problems.

Operating instructions

What you should know about brake fluid:
Hydraulic braking systems contain brake fluid. It is manufactured from glycol or silicone fluid: it is poisonous, it is harmful to the skin, and it strips paint, so it should not be allowed to get on to vehicle paintwork. If things go wrong, you must wash it immediately with plenty of water – it is not enough to rub it off with a cloth. An important parameter for the quality of brake fluid is its boiling point. The "American Department of Transportation (DOT)" distinguishes the following quality classes for motor vehicles:
DOT 3: Wet boiling point approx. 140 °C
DOT 4: Wet boiling point approx. 160 °C
DOT 5.1: Wet boiling point approx. 180 °C
(The figures are quoted somewhat differently by various manufacturers.)
The various classes of hydraulic fluid based on glycol can be mixed. This means, for instance, that when changing from DOT 4 to the higher-quality DOT 5.1 fluid, the system does not have to be flushed out completely. DOT 4 is the most widely used on motorbikes nowadays. Hydraulic fluid based on glycol is hygroscopic, which means that it absorbs water over the course of time, even in a closed brake system. As a result, the boiling point is reduced: water evaporates at temperatures of more than 100 °C; braking, however, generates heat, as a result of which small bubbles of steam form in the brake fluid, which then no longer transmits the pressure optimally. The consequence is that if there is too much water in the hydraulic fluid, the braking pressure point collapses during braking – the brake pedal or lever goes slack, and pressure is not felt until after a number of "pumping" strokes. For this reason, it is essential for safe driving that the brake fluid is regularly exchanged in accordance with the manufacturers specifications (every 1-2 years).

Notice! Brake fluid with the DOT 5 class (not 5.1!) is based on silicone, and must never be mixed with the fluids mentioned above (flocculation). DOT 5 brake fluid is often used in Harley-Davidson and Buell bikes. It is essential to check first which fluid belongs in the brake system. Observe the vehicle manufacturer's DOT specification!

Checking the automatic fuel cock of a motorbike:
An automatic fuel cock has a membrane controller that is joined by a thin pipe to the intake port of the engine or to the carburettor intake manifold. As soon as the engine is started, a vacuum acts on the membrane in the fuel cock. The membrane pulls a small piston back, opening the way for the flow of fuel. When the engine is stopped the membrane returns to its initial position, and the piston closes the fuel cock again. In order to test it, pull the hose off the engine's intake port. Push on the Mityvac manual pump, using an adaptor nozzle (I) if necessary. Remove the fuel pipe from the carburettor, and put the end in a container. Make sure that neither of the hoses has a kink in it. Switch the fuel cock to "ON". If you now operate the Mityvac manual pump, fuel will run into the container – if not, the membrane controller of the fuel cock is faulty.

If you don't work the manual pump, or if it is not connected (there is no vacuum), fuel must not flow out of the fuel cock. If fuel drips out of the fuel cock even when there is no vacuum, there is a fault in the membrane piston, in its seal ring or in its seating.

Checking a vacuum advance unit for ignition adjustment:
The ignition equipment of some models of car and motorbike has a vacuum advance unit which adjusts the ignition timing in response to the loading on the engine (rather than in response to the speed, as is done by the centrifugal governor). The pipe for the vacuum advance unit is connected to the intake manifold above the butterfly valve in the carburettor. The position of the membrane depends on the difference in pressure between the intake manifold and external atmosphere. If the pipe is removed when the engine is running, the ignition timing is delayed and the speed of rotation drops. If the Mityvac manual pump it is now used to apply vacuum to the hose, the speed of rotation must rise again. The change to the ignition timing can be observed more accurately using an ignition timing gun (stroboscopic lamp, order no. 10003442). If the vacuum advance unit acts on a base plate with interruptor contacts or inductive pickups, it can also be tested when the motor is stationary: If the manual pump is applied to the vacuum hose, the base plate must move. If not, the membrane is faulty or the base plate cannot move freely.

Safety instruction:
Since this is a universal product and not intended just for one particular vehicle, it is important to make sure before you first use it that it can be used or applied properly and without difficulty for the desired purpose. Pay attention therefore to information about specific vehicle components in the operating instructions for your vehicle, or ask your authorized dealer. This is essential, as improper use of this product can impair the safety and/or condition of the vehicle.

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